IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	: Shunpei Yamazaki et al.	Art Unit	: 2826
Serial No.	: 10/753,524	Examiner	: Johannes P. Mondt
Filed	: January 9, 2004		
Title	: SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING THE SAME		

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT IN REPLY TO ACTION OF JANUARY 10, 2006

Please amend the above-identified application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 4 of this paper.

Amendments to the Claims

This listing of claims replaces all prior versions and listings of claims in the application.

Listing of Claims

1-20. (Canceled)

21. (Currently Amended) A personal computer comprising:

a semiconductor film provided over a substrate and comprising a source region, a drain region and a channel formation region provided between said source region and said drain region; and

a gate electrode provided adjacent to said channel formation region with a gate insulating film therebetween. [[;]]

~~a metal element for promoting crystallization, said metal element contained in said semiconductor film;~~

~~a layer comprising an element selected from the group consisting of titanium, tungsten, tantalum and molybdenum, said layer provided adjacent to at least one of said source region and said drain region with a silicide thereof therebetween;~~

~~an interlayer insulating film provided over said semiconductor film and said gate electrode; and~~

~~a contact hole provided in said interlayer insulating film and provided over said at least one of said source region and said drain region and provided over said layer comprising said element selected from the group consisting of titanium, tungsten, tantalum and molybdenum,~~

wherein lattices are continuously connected to each other at a grain boundary of said semiconductor film.

22. (Previously Presented) A computer according to claim 21 further comprising an auxiliary capacitance.

23. (Previously Presented) A computer according to claim 21 further comprising:

a pixel electrode;

an opposite electrode; and

a liquid crystal provided between said pixel electrode and said opposite electrode.

24. (Canceled)

25. (Previously Presented) A computer according to claim 21 wherein channel length of said channel formation region is 2 μm or shorter.

26-41. (Canceled)

42. (New) A computer according to claim 21 wherein direction of movement of a carrier in said channel formation region coincides with direction of extension of said grain boundary.

REMARKS

Claims 21-23, 25 and 42 are currently pending, with claim 21 being independent. Claim 21 has been amended in order to remove the limitations added in applicant's prior response and to reinsert the limitation that the lattices are continuously connected to each other at a grain boundary of said semiconductor film. New claim 42 corresponds to original claim 24, which was cancelled in applicant's prior response. No new matter has been introduced.

The claims have been rejected under section 112, second paragraph. Applicant requests reconsideration and withdrawal of this rejection in view of the amendments to independent claim 21. The rejection indicates that the recitations "according to high resolution TEM" and "at grain boundary" render claim 21 indefinite. In response, applicant has amended claim 21 so as to no longer recite "according to high resolution TEM" and to recite "at a grain boundary". These amendments are believed to address the Examiner's concerns.

As amended, claim 21 recites that "lattices are continuously connected to each other at a grain boundary of said semiconductor film." This is shown in Figs. 17A and 17B of the application. For example, at a crystal grain boundary seen at the center of the photograph of Fig. 17A from top to bottom, a lattice image of the left crystal region is continuously connected to a lattice image of the right crystal region.

Claims 21, 23 and 25 have been rejected as being unpatentable over Okada (U.S. Patent No. 5,582,640) in view of Kurihara (JP 08-211367). Applicant requests reconsideration and withdrawal of this rejection because neither Okada, Kurihara, nor any proper combination of the two describes or suggests an arrangement in which "lattices are continuously connected to each other at a grain boundary of said semiconductor film," as recited in claim 21. Recognizing that Okada does not teach this aspect of the claim, the rejection indicates that it would have been obvious to include this aspect of the claims in view of Okada's description, at col. 33, line 62 to col. 34, line 22, of a third embodiment in which heat treatment is carried out to attain single crystallization such that no crystallization defects could be observed by a TEM. The rejection further indicates that the motivation for including this aspect of the claim would derive "from the absence of a deterioration in electron mobility due to crystal defects."

Applicant respectfully disagrees with the Examiner's conclusion. In particular, while Okada mentions crystal defects, Okada does not describe or suggest lattices continuously connected to each other at a grain boundary. Such lattices are much different from the crystal defects, or lack thereof, described by Okada, and, contrary to what the rejection appears to imply, such lattices would not inherently result from reducing lattice defects in Okada's third embodiment. Kurihara, which is cited for purposes of showing a personal computer, also is entirely silent as to this aspect of the claim. Accordingly, for at least these reasons, the rejection should be withdrawn.

Claim 22 has been rejected as being unpatentable over Okada in view of Kurihara and Ukai (U.S. Patent No. 4,810,060). Applicant requests reconsideration and withdrawal of this rejection because Ukai, which is cited as showing an auxiliary capacitance, does not remedy the failure of Okada and Kurihara to describe or suggest the subject matter of independent claim 21 from which claim 22 depends.

Claim 21 has been rejected for obviousness-type double patenting over claim 5 of U.S. Patent No. 6,380,560, and claim 23 has been rejected for obviousness-type double patenting over claim 16 of U.S. Patent No. 6,730,932 in view of Clark. Applicant requests that these rejections be held in abeyance until claims 21 and 23 are otherwise found to be allowable.

The fee in the amount of $120 in payment of the one month extension fee is being paid concurrently herewith on the Electronic Filing System (EFS) by way of Deposit Account authorization. Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

Date: 3/10/06

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